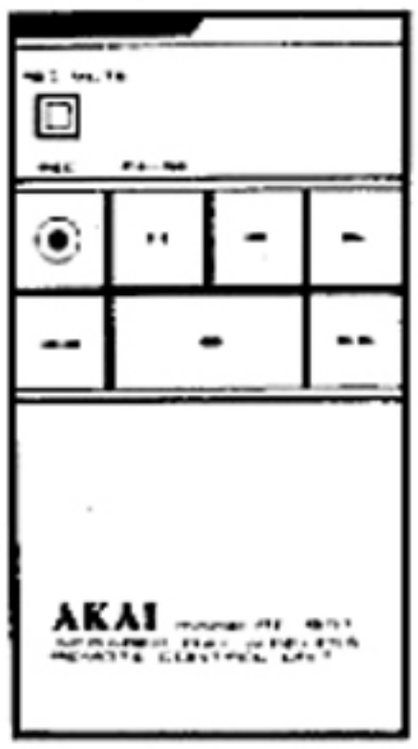
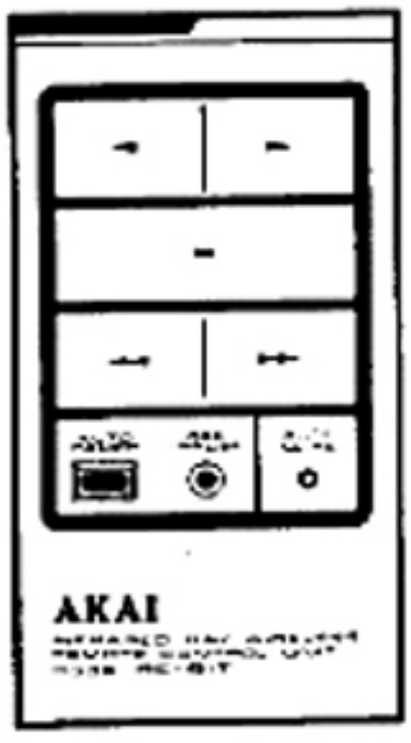
# AKAI SERVICE MANUAL





RC-90/91

## INFRARED RAY WIRELESS REMOTE CONTROL UNIT

# RC-90
# MODEL RC-91

## 1. PRECAUTIONS

1. Remote Control Unit RC-90 is for use with:
   Stereo Tape Deck: GX-747, GX-77
   Stereo Cassette Deck: CS-F9, CS-F11, CS-F33R, GX-F15, GX-F25, GX-F35, GX-F37, GX-F44R, GX-F[illegible]R, GX-F66R, GX-F95, UC-F5
   * This Unit can also be used with any other equipment marked "RC-21" or RC-90" on the rear panel.

2. Remote Control Unit RC-91 is for use with:
   Stereo Cassette Deck: GX-F31, GX-F51, GX-F71, GX-F91
   * This Unit can also be used with any other equipment marked "RC-31" or RC-91" on the rear panel.

# II. SPECIFICATIONS

## 1. MODEL RC-90

**TRANSMITTER RC-90T**

| | |
|---|---|
| SYSTEM | Infrared Ray PCM System |
| NUMBER OF CHANNELS | 14 |
| AREA OF OPERATION | 7 m (on axis) |
| DIRECTIVITY | ±30° (at 4m) |
| OPERATION TIME | 5000 times |
| POWER REQUIREMENT | DC 3V (SUM-3, AA-3 or R6 size battery × 2) |
| DIMENSIONS | 65(W) × 18.5(H) × 120(D) mm |
| WEIGHT | 85 grams (without batteries) |

**RECEIVER RC-90R**

| | |
|---|---|
| REMOTE CONTROL PLUG | DIN type (8 pins) |
| POWER REQUIREMENT | DC 7.5 V (SUM-3, AA-3 or R6 size battery × 5) |
| POWER CONSUMPTION | 4 mA |
| DIMENSIONS | 71(W) × 18.5(H) × 140(D) mm (without remote control cable) |
| WEIGHT | 130 grams (without batteries) |

* For improvement purposes, specifications and design are subject to change without notice.

## 2. MODEL RC-91

**TRANSMITTER RC-91T**

| | |
|---|---|
| SYSTEM | Infrared Ray PCM System |
| NUMBER OF CHANNELS | 14 |
| LENGTH OF OPERATION | 7 m (on axis) |
| DIRECTIVITY | ±15° (at 4m) |
| OPERATION TIME | 5000 times |
| POWER REQUIREMENT | DC 3V (SUM-3, AA-3 or R6 size battery × 2) |
| DIMENSIONS | 65(W) × 18.5(H) × 120(D) mm |
| WEIGHT | 85 grams (without batteries) |

**RECEIVER RC-91R**

| | |
|---|---|
| REMOTE CONTROL PLUG | DIN type (8 pins) |
| POWER REQUIREMENT | DC 7.5 V (SUM-3, AA-3 or R6 size battery × 5) |
| POWER CONSUMPTION | 4 mA |
| DIMENSIONS | 71(W) × 18.5(H) × 140(D) mm (without remote control cable) |
| WEIGHT | 130 grams (without batteries) |

* For improvement purposes, specifications and design are subject to change without notice.

# III. PARTS LIST

## 1. MODEL RC-90

### 1) TRANSMITTER BLOCK RC-90T

| REF. NO. | PARTS NO. | DESCRIPTION |
|---|---|---|
| 1-IC1,2 | EI-710031 | IC TC40H002 |
| 1-IC3,4 | EI-710033 | IC TC40H008 |
| 1-IC5 | EI-710034 | IC M5D110P |
| 1-TR1 to 12 | ET-200505 | TR 2SC2603 E, F |
| 1-TR13 | ET-318603 | TR 2SD545NP F |
| 1-D1, 2 | ED-562386 | D GERMA H 1S188AM |
| 1-D3, 4 | ED-705414 | D LED SE303A INFRARED |
| 1-SW1 | ES-710038 | SW SLIDE |
| 1-X1 | EZ-710037 | OSC CE CSB455E 455KHz |
| 1-1 | EA-710030 | PC SW RC-90T |
| 1-2 | EZ-710026 | CONTACT POINT RUBBER |
| 1-3 | EZ-710027 | TERMINAL BATTERY A |
| 1-4 | EZ-710028 | TERMINAL BATTERY B |
| 1-5 | EZ-710029 | TERMINAL BATTERY C |
| 1-6 | AX-710025 | COVER BATTERY RC-90T |

### 2) RECEIVER BLOCK RC-90R

| REF. NO. | PARTS NO. | DESCRIPTION |
|---|---|---|
| 2-IC1 | EI-330226 | IC μPC1373H |
| 2-IC2 | EI-710042 | IC M50111P |
| 2-IC3 | EI-705079 | IC TC4028BP |
| 2-TR1 | ET-200505 | TR 2SC2603 E, F |
| 2-TR2 | ET-200558 | TR 2SA1115 E, F |
| 2-TR6 to 12 | ET-200505 | TR 2SC2603 E, F |
| 2-D1 | ED-710045 | D PHOTO TPS703 |
| 2-D2,3 | ED-557447 | D SILICON H 1S1588 |
| 2-SW1 | ES-710038 | SW SLIDE |
| 2-L1 | EO-709902 | COIL FS1012-562J |
| 2-X1 | EZ-710037 | OSC CE CSB455E 455KHz |
| 2-1 | EZ-710027 | TERMINAL BATTERY A |
| 2-2 | EZ-710028 | TERMINAL BATTERY B |
| 2-3 | EZ-710029 | TERMINAL BATTERY C |
| 2-4 | EZ-710040 | TERMINAL BATTERY D |
| 2-5 | AX-710039 | COVER BATTERY RC-90R |
| 2-6 | EJ-710041 | PLUG W/CORD |

## 2. MODEL RC-91

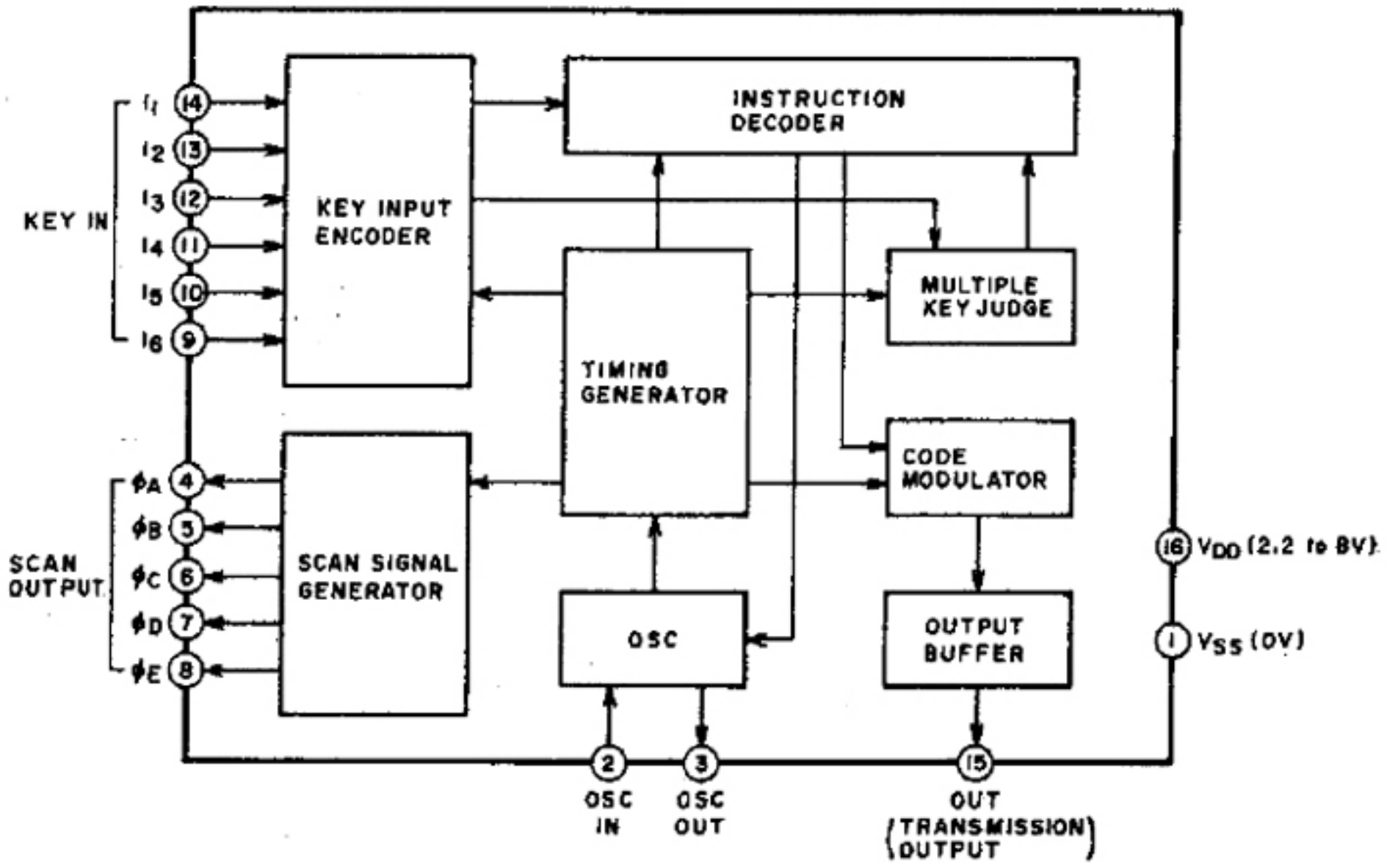
### 1) TRANSMITTER BLOCK RC-91T

| REF. NO. | PARTS NO. | DESCRIPTION |
|---|---|---|
| 1-IC1 | EI-710031 | IC TC40H002 |
| 1-IC2 | EI-710033 | IC TC40H008 |
| 1-IC3 | EI-710034 | IC M50110P |
| 1-TR1 to 6 | ET-200505 | TR 2SC2603 E, F |
| 1-TR7 | ET-318603 | TR 2SD545NP F |
| 1-D1, 2 | ED-705414 | D LED SE303A INFRARED |
| 1-SW1 | ES-710038 | SW SLIDE |
| 1-X1 | EZ-710037 | OSC CE CSB455E 455KHz |
| 1-1 | EZ-710060 | CONTACT POINT RUBBER |
| 1-2 | EZ-710027 | TERMINAL BATTERY A |
| 1-3 | EZ-710028 | TERMINAL BATTERY B |
| 1-4 | EZ-710029 | TERMINAL BATTERY C |
| 1-5 | EA-710061 | PC SW RC-91 |
| 1-6 | AX-710025 | COVER BATTERY RC-90T |

### 2) RECEIVER BLOCK RC-91R

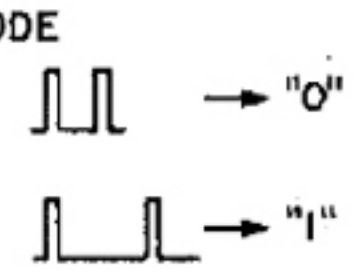
| REF. NO. | PARTS NO. | DESCRIPTION |
|---|---|---|
| 2-IC1 | EI-330226 | IC μPC1373H |
| 2-IC2 | EI-710042 | IC M50111P |
| 2-IC3 | EI-705079 | IC TC4028BP |
| 2-TR1 | ET-200505 | TR 2SC2603 E, F |
| 2-TR2 | ET-200558 | TR 2SA1115 E, F |
| 2-TR6 to 12 | ET-200505 | TR 2SC2603 E, F |
| 2-D1 | ED-710045 | D PHOTO TPS703 |
| 2-D2,3 | ED-557447 | D SILICON H 1S1588 |
| 2-SW1 | ES-710038 | SW SLIDE |
| 2-L1 | EO-709902 | COIL FS1012-562J |
| 2-X1 | EZ-710037 | OSC CE CSB455E 455KHz |
| 2-1 | EZ-710027 | TERMINAL BATTERY A |
| 2-2 | EZ-710028 | TERMINAL BATTERY B |
| 2-3 | EZ-710029 | TERMINAL BATTERY C |
| 2-4 | EZ-710040 | TERMINAL BATTERY D |
| 2-5 | AX-710039 | COVER BATTERY RC-90R |
| 2-6 | EJ-710041 | PLUG W/CORD |

# M50110P

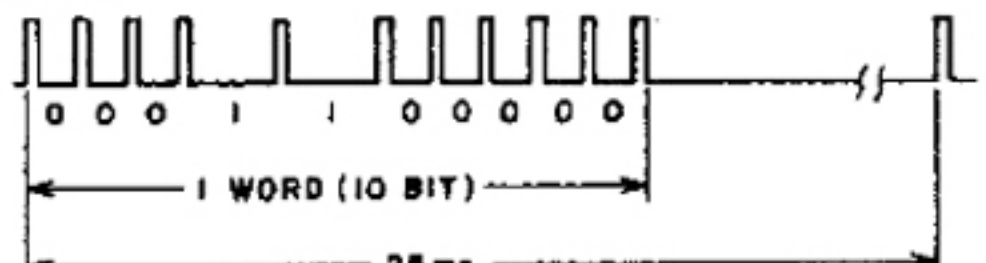



TRANSMISSION CODE (M50110P PIN ⑮)

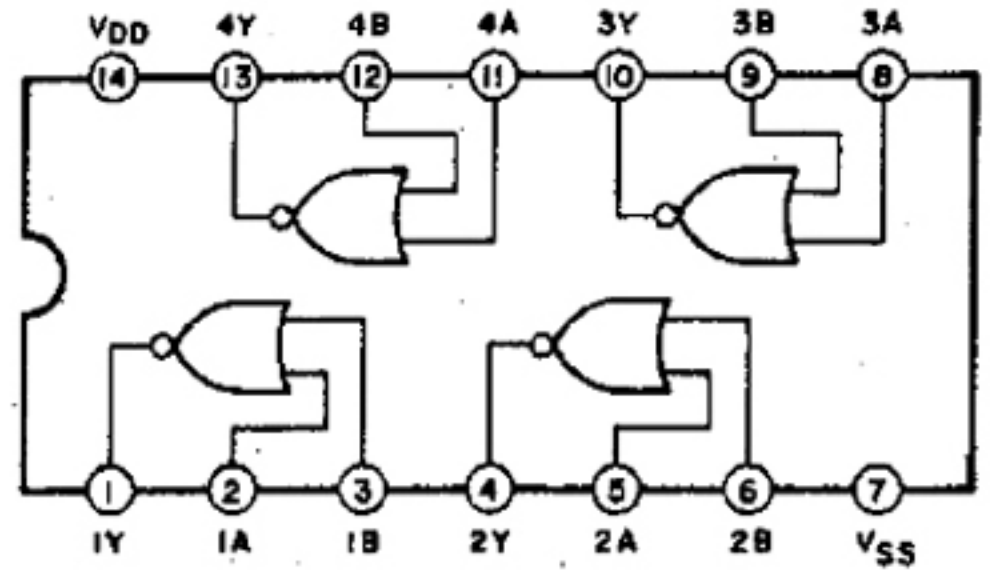
CODE



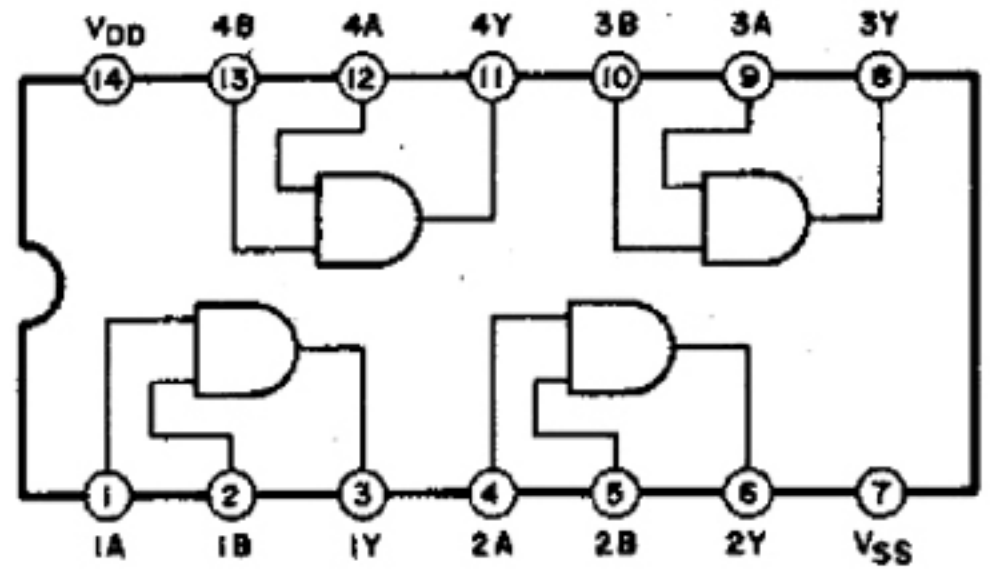

EXAMPLE




# TC40H002P

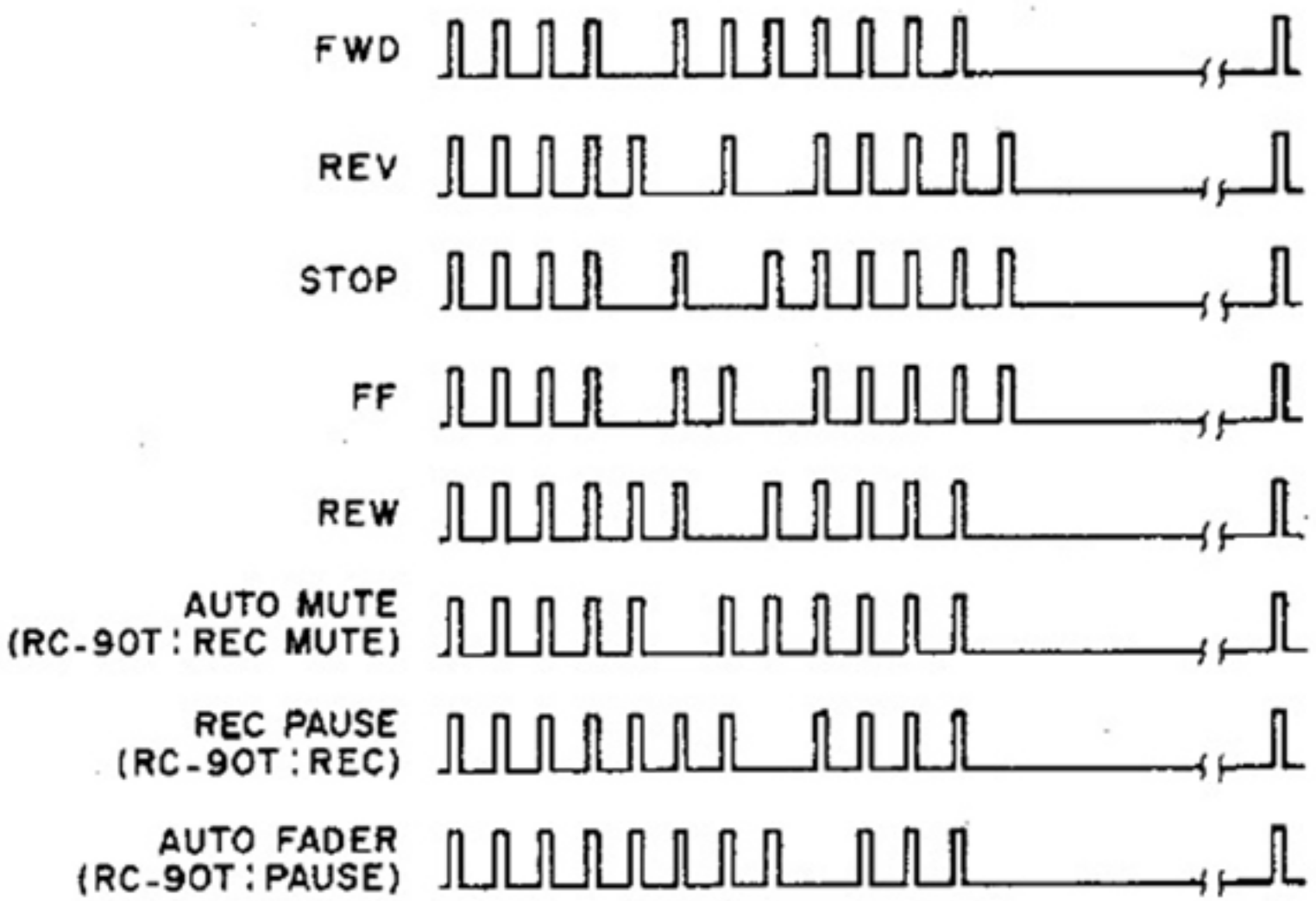


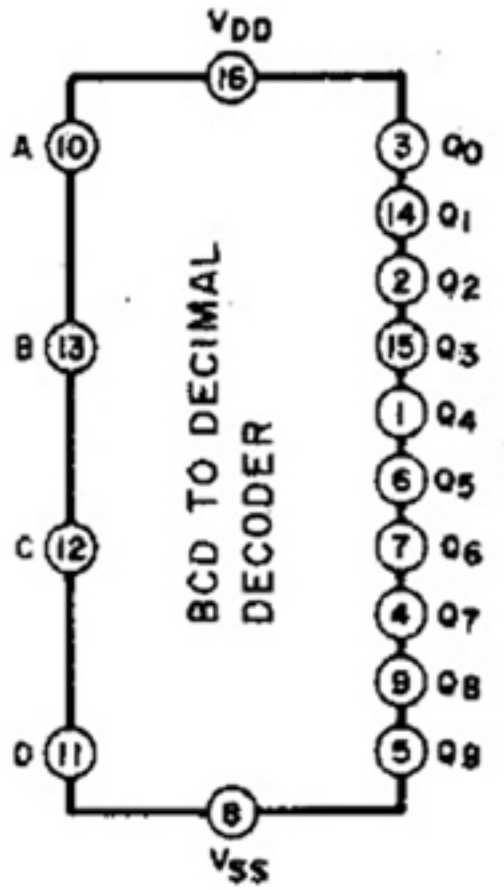

# TC40H008P



# TC4028BP

WAVE FORM OF LSI M50110P PIN ⑮ (RC-90T/RC-91T)



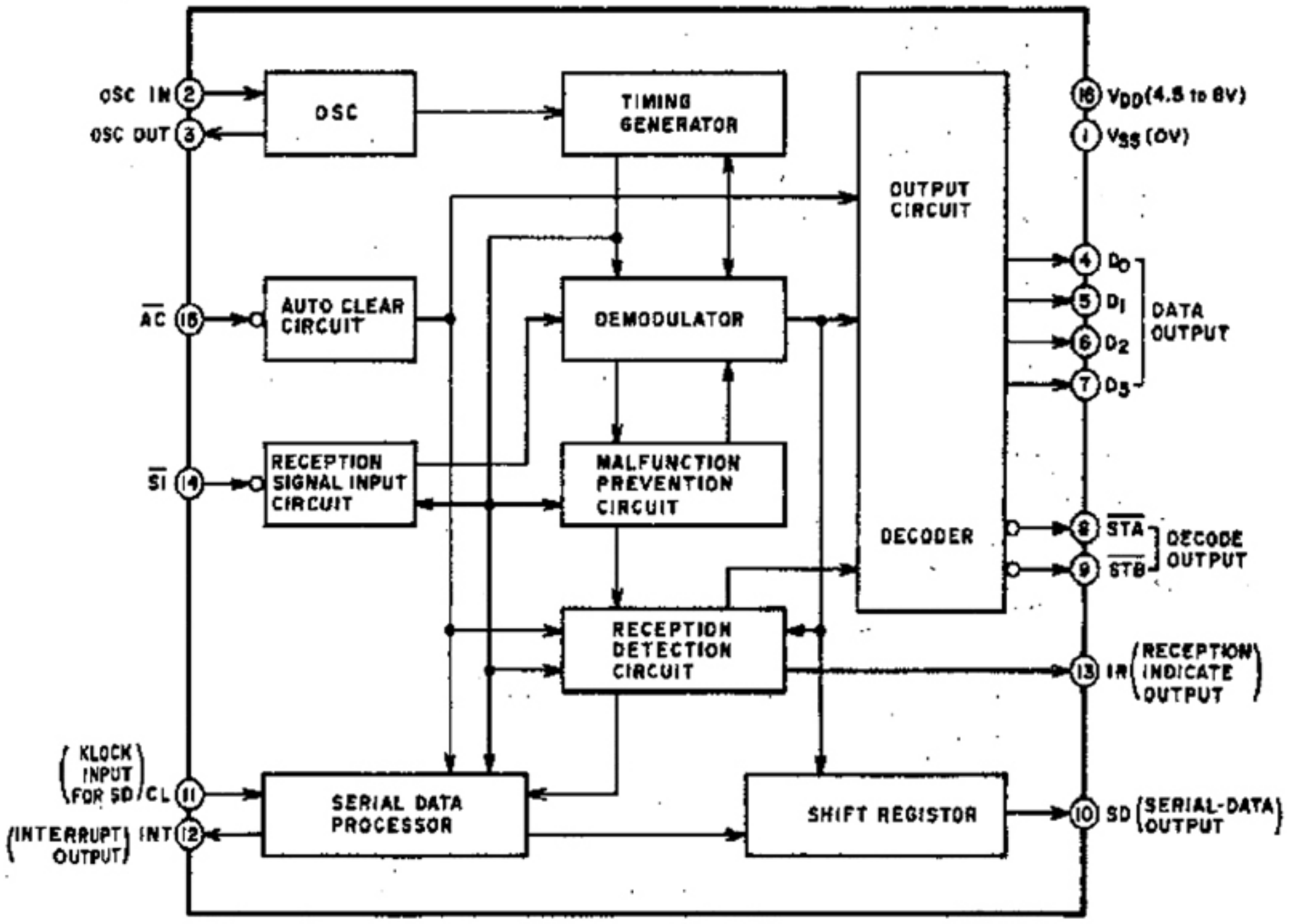



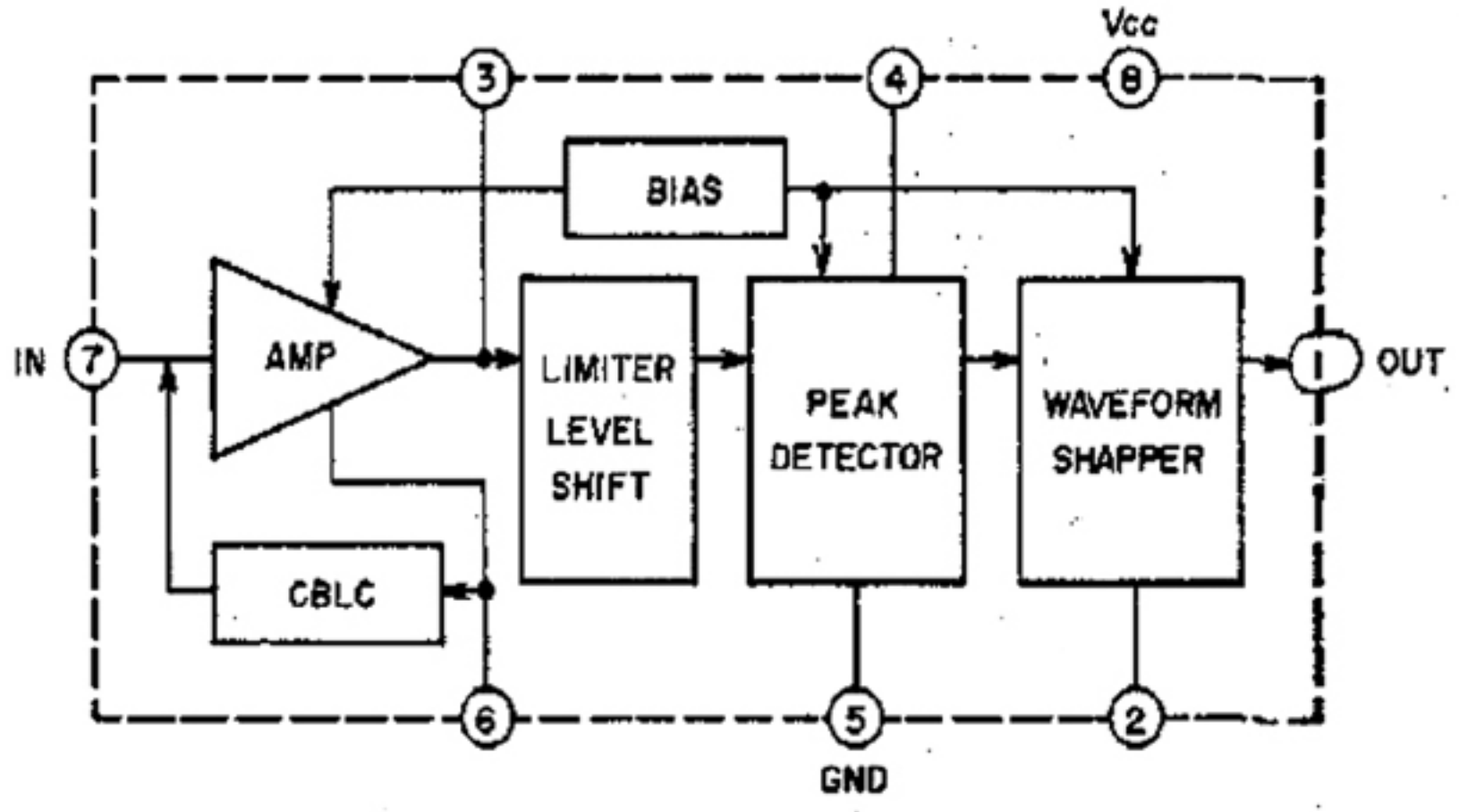

TRUTH TABLE

| INPUTS | | | | SELECTED OUTPUT "H" |
|---|---|---|---|---|
| D | C | B | A | |
| L | L | L | L | $Q_0$ |
| L | L | L | H | $Q_1$ |
| L | L | H | L | $Q_2$ |
| L | L | H | H | $Q_3$ |
| L | H | L | L | $Q_4$ |
| L | H | L | H | $Q_5$ |
| L | H | H | L | $Q_6$ |
| L | H | H | H | $Q_7$ |
| H | ※ | ※ | L | $Q_8$ |
| H | ※ | ※ | H | $Q_9$ |

※ : DON'T CARE

# M50111P




# UPC1373H

( ) INDICATES VOLTAGE : WHEN PRESS THE FWD BUTTON.
"P" INDICATES THAT TIMING PULSE WILL BE DISPLAYED.

SAFETY LOCK

BATT 1.5V x 2

IC3 M50110P

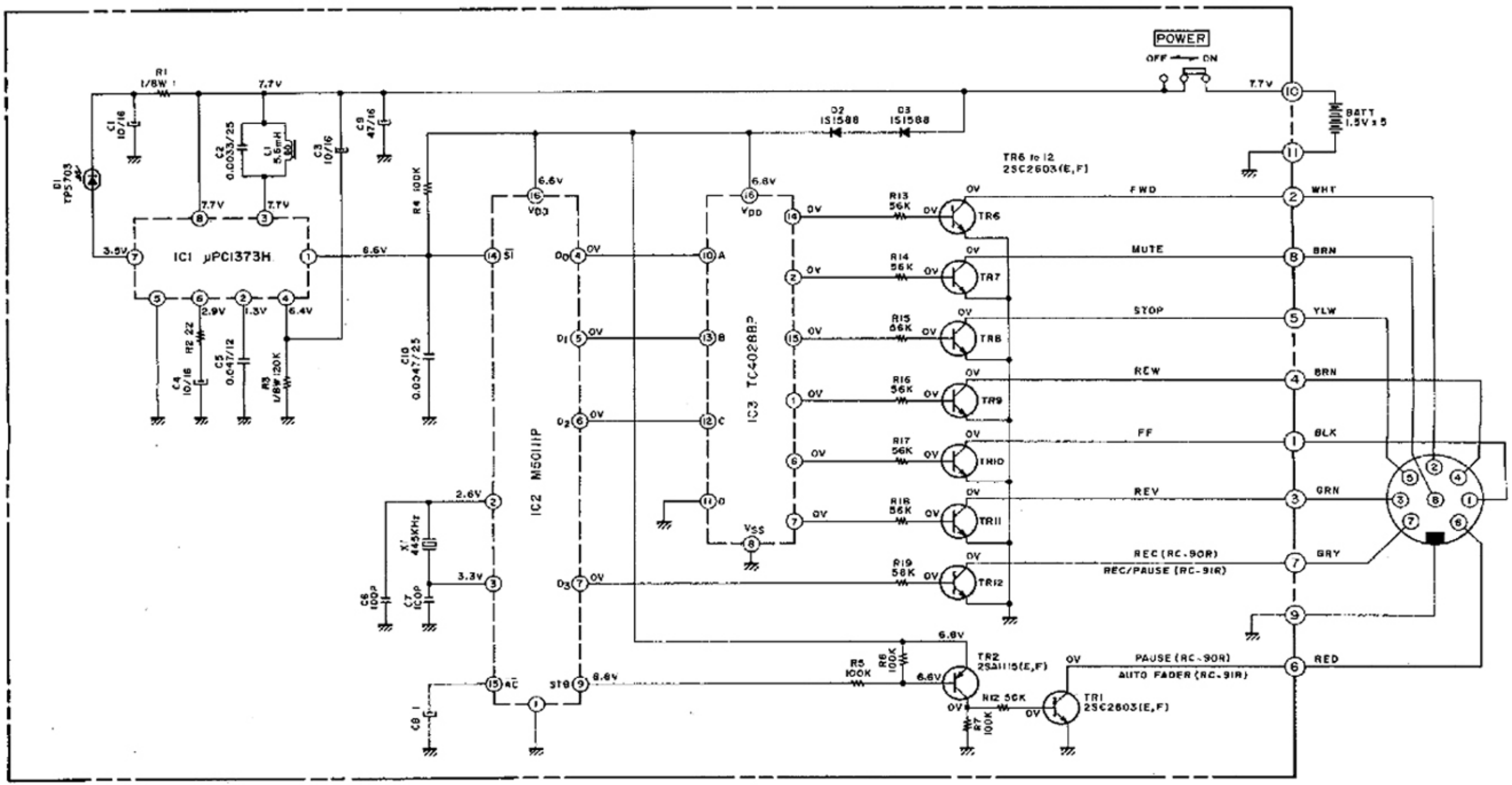
IC2 TC40H008

IC1 TC40H002

TR1 to 6 2SC2603(E, F)
TR7 2SD545NP(F)

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)

# RC-91T
# SCHEMATIC DIAGRAM
## NO. 1641836A




NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W (J)
ALL CAPACITORS IN μF 50 WV (J)

2SA1115
2SC2603

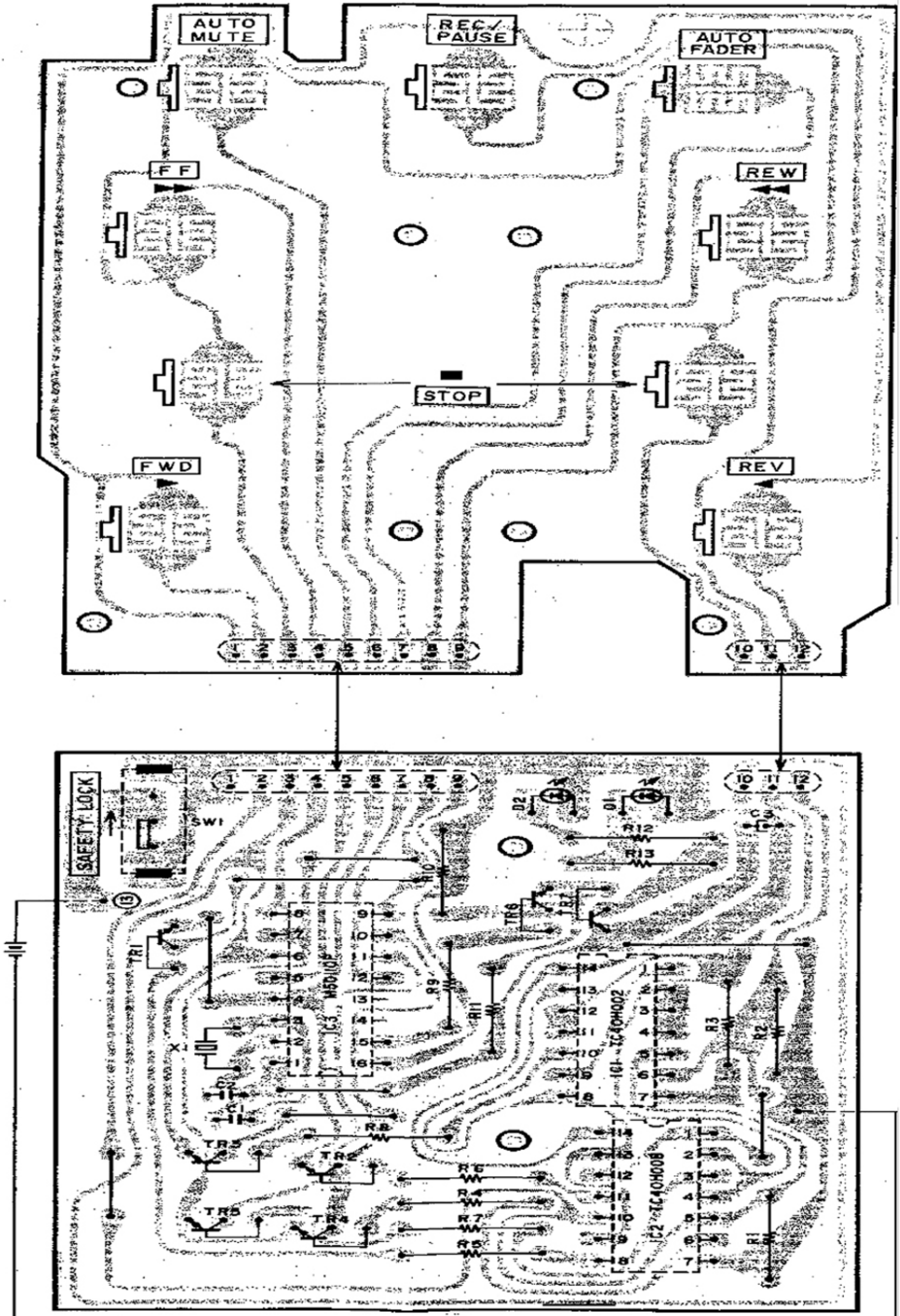
# RC-90R/91R
# SCHEMATIC DIAGRAM
NO. 1641835A

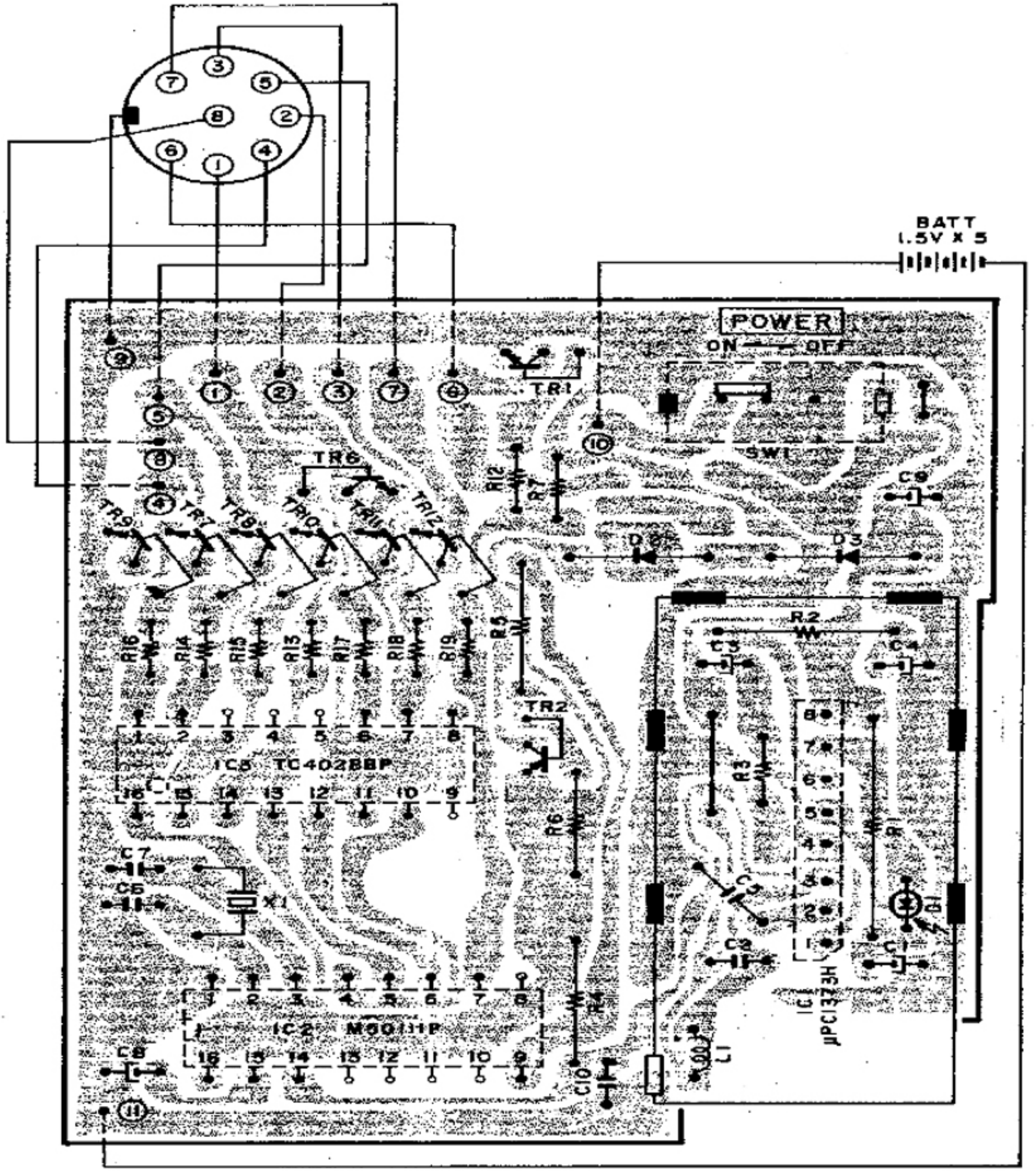
TR1 to 12 ---- 2SC2603 (E,
TR13 ---- 2SD545NP(F)

2SC2603

2SD545

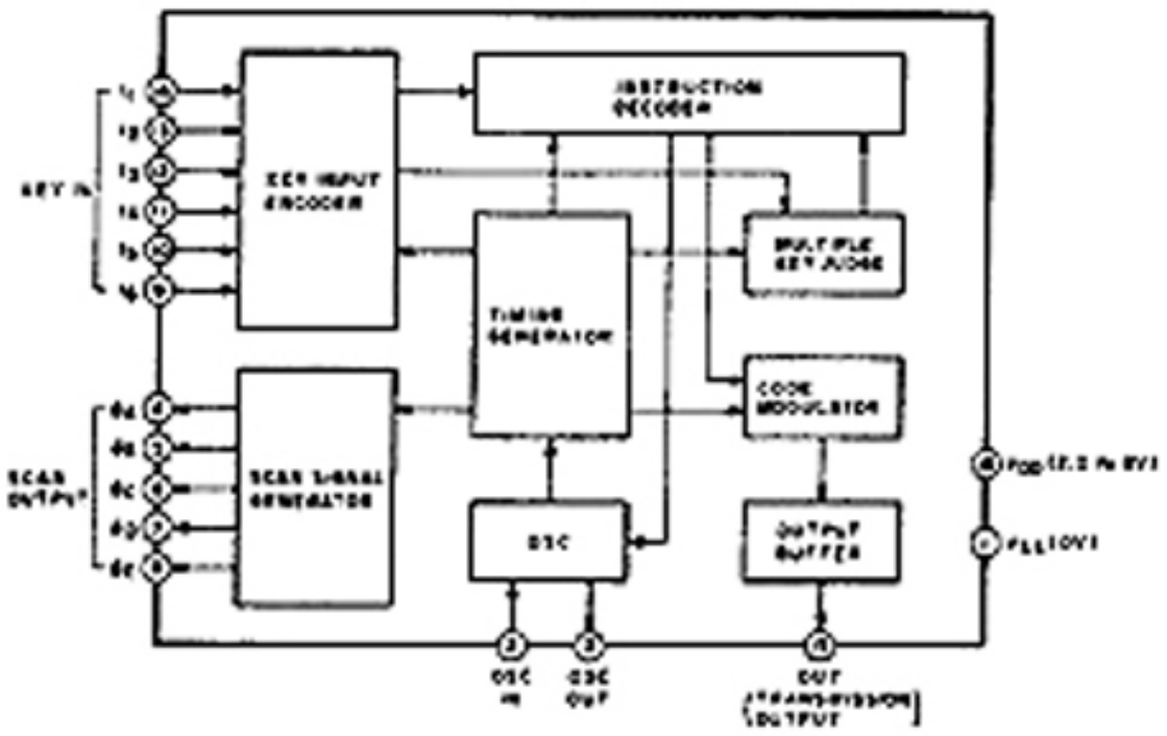
SAFETY LOCK
SW1
C3
R21
R20
R23
R22
R10
X1
TR12
TR13
D4
D5
TR8
TR2
TR5
TR3
TR4
C2
C
TR1
R19
R17
IC3 M5011DP
TR7
R8
R9
R13
R11
R6
D1
TR6
R16
R15
IC4 CXD1002Q
IC2 CXD1008Q
IC1 CXD1092
D2
R7
R12
R4
R2
R3
R1
TR10
R18
R14
TR11
TR9
R5
(10 9 8 7 6)
(5 4 3 2 1)
FF
STOP
REW
FWD
REV
PAUSE
REC
REC/MUTE


AUTO MUTE
REC/ PAUSE
AUTO FADER
FF
REW
STOP
FWD
REV
SAFETY LOCK
SW1
TR1
TR2
TR3
TR4
TR5
TR6
TR7
D1
D2
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
C1
C2
C3
X1
M50H10
TC40H002
TC40H008


BATT
1.5V x 5
POWER
ON
OFF
SW1
TR1
TR2
TR6
TR9
TR7
TR8
TR10
TR11
TR12
R12
R11
R5
R6
R2
R3
R1
R16
R14
R15
R13
R17
R18
R19
C9
C3
C4
C7
C5
C8
C2
C1
D1
D2
D3
X1
IC5 TC40288P
IC2 M60111P
μPC1353H

# V. SCHEMATIC DIAGRAM OF ICs

## M50110P




TRANSMISSION CODE (M50110P PIN ⑨)

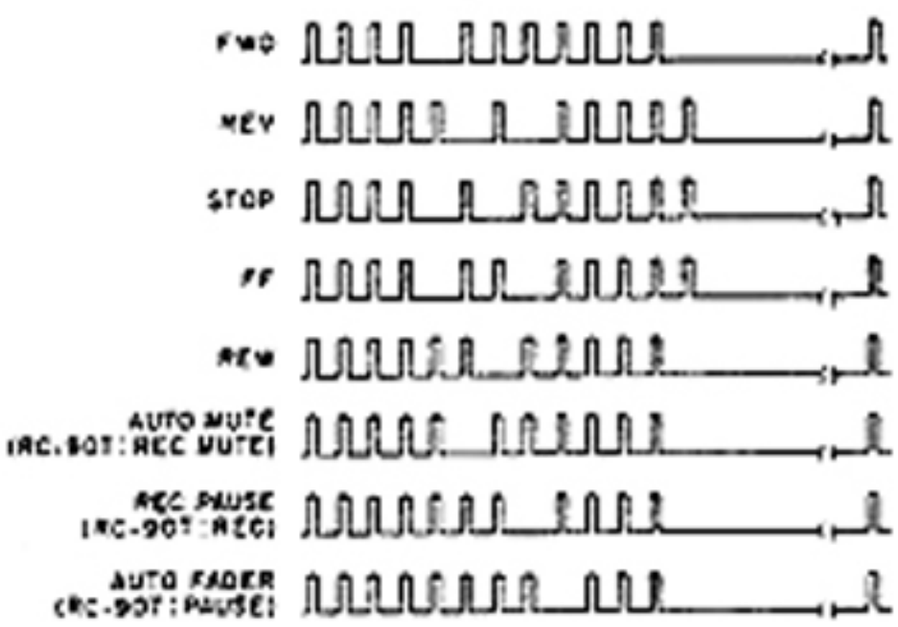
CODE

"0"

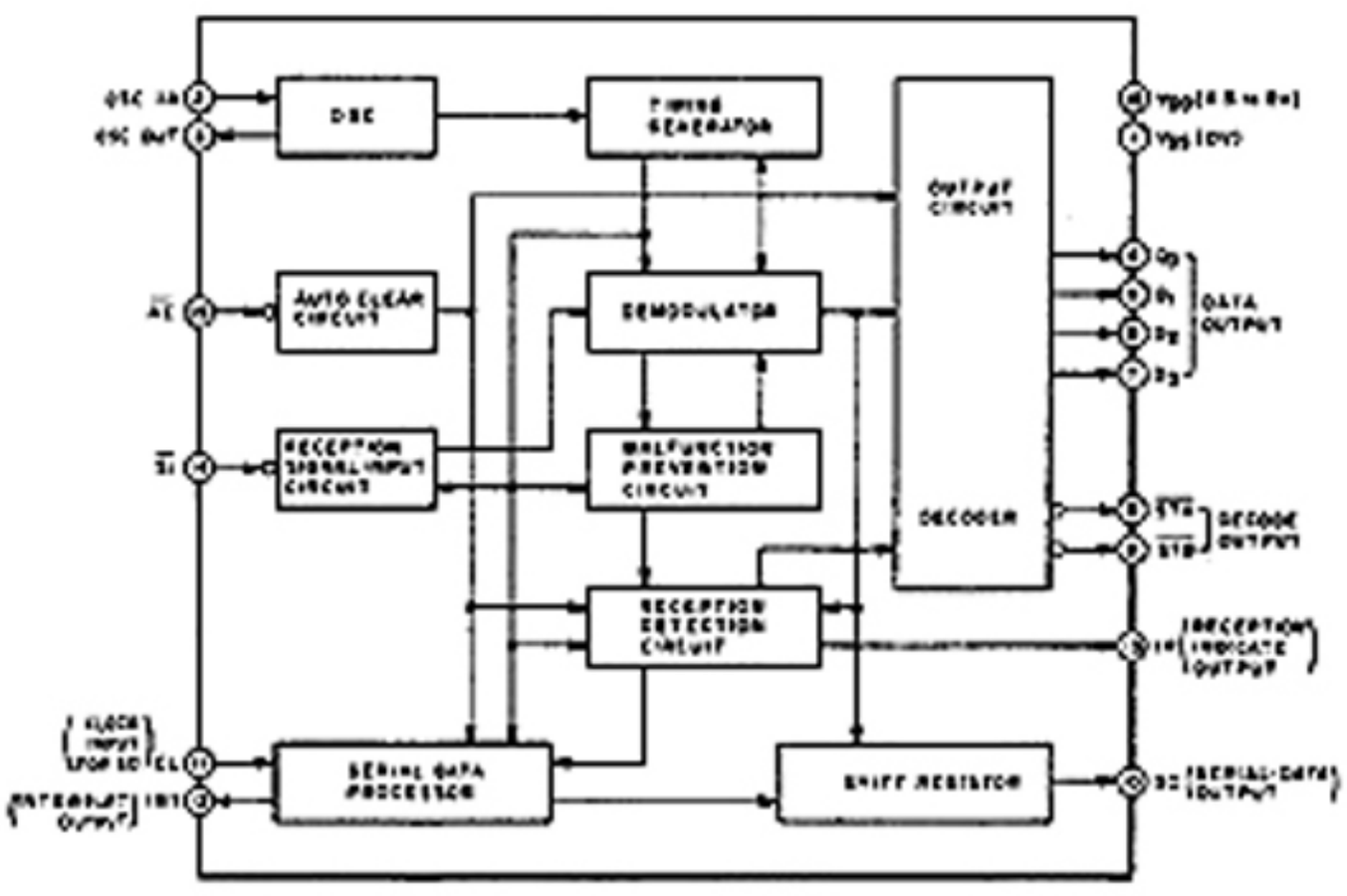
"1"

EXAMPLE

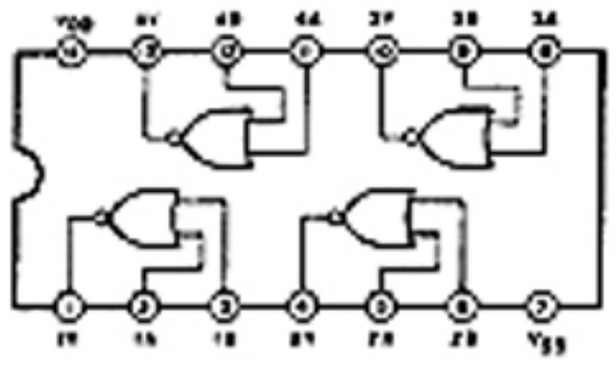
WAVE FORM OF LSI M50110P PIN ⑫ (RC-90T/RC-91T)



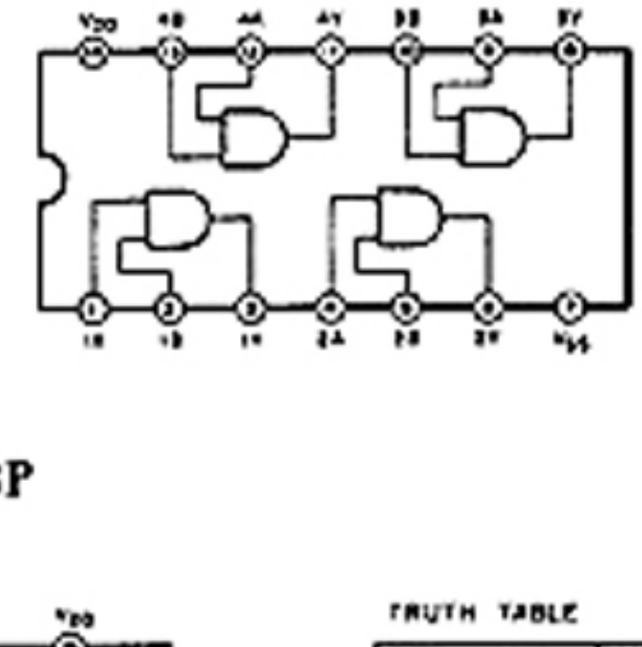

## M50111P



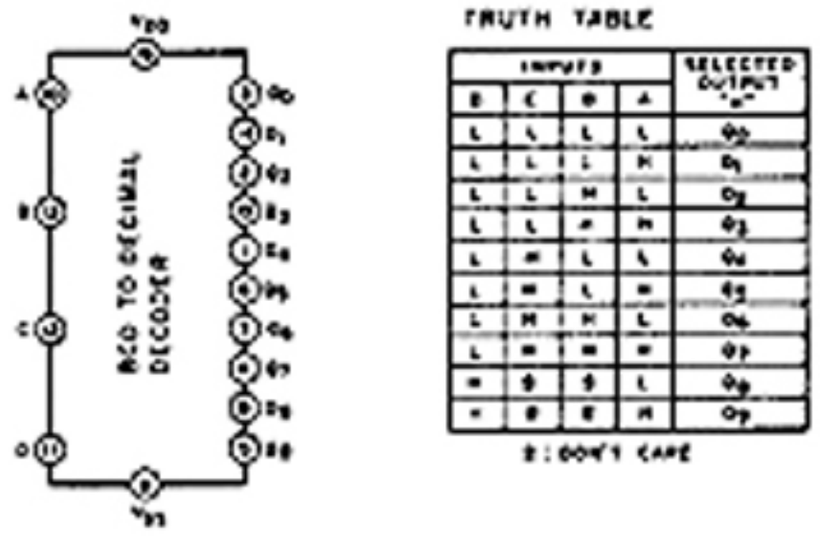

## TC40H002P



## TC40H008P

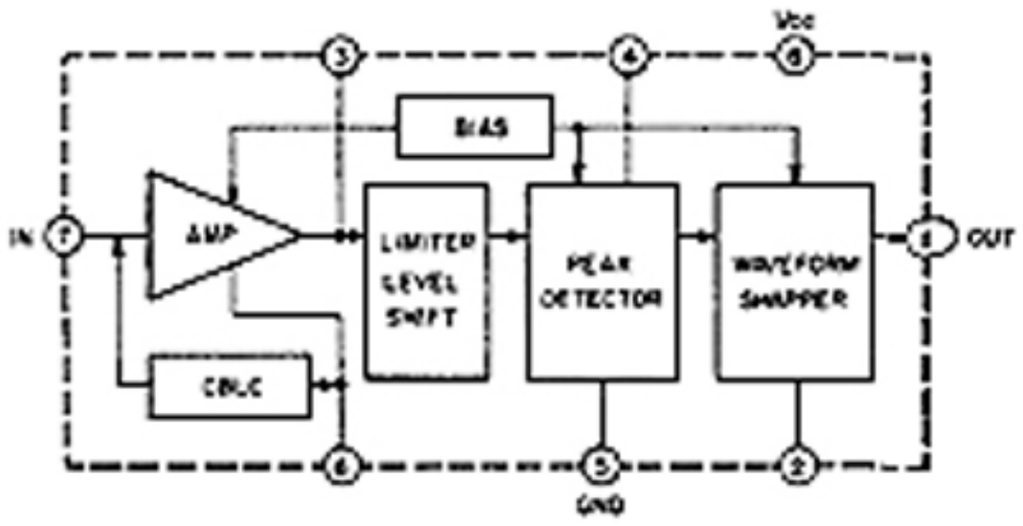


## TC4028BP




TRUTH TABLE

| INPUTS | | | | SELECTED OUTPUT "1" |
|---|---|---|---|---|
| D | C | B | A | |
| L | L | L | L | $Q_0$ |
| L | L | L | H | $Q_1$ |
| L | L | H | L | $Q_2$ |
| L | L | H | H | $Q_3$ |
| L | H | L | L | $Q_4$ |
| L | H | L | H | $Q_5$ |
| L | H | H | L | $Q_6$ |
| L | H | H | H | $Q_7$ |
| H | L | L | L | $Q_8$ |
| H | L | L | H | $Q_9$ |

X : DON'T CARE

## μPC1373H